

Seattle & King County Tuberculosis Control Annual Report 2003

Tuberculosis Case Reporting

The incidence of tuberculosis (TB) continues to decline in the United States. In 2002, national incidence reached an all time low of 5.2 cases per 100,000. In Washington State, the case rate also continues to decline. The incidence in 2003 was 4.09 per 100,000. In contrast, the TB case rate in Seattle & King County has shown a steady rise since 1999 leveling off in 2003 at 8.7 per 100,000.

In 2003 Seattle & King County counted 155 cases of active Tuberculosis representing the first time in four years that the annual number of TB cases has not increased. An important distinction must be made between reported and counted cases. A total of 169 cases were reported from Seattle & King County, however, 8% of these were not officially counted due to established reporting practices, which disallow counting cases that are transfers from other jurisdictions. Thus the number of counted cases is not an accurate reflection of the clinical burden of treating active TB cases in Seattle & King County.

**Tuberculosis Case Rates 1999-2003 for
Washington and Seattle & King County**

		1999	2000	2001	2002	2003
Washington State	count	258	258	261	252	250
	rate/100,000	4.4	4.43	4.36	4.17	4.09
Seattle & King County	count	104	127	139	158	155
	rate/100,000	6.2	7.3	7.9	8.9	8.7

Demographics of Tuberculosis Cases

Selected demographic characteristics are summarized in the tables below. Active cases of TB in Seattle & King County were predominantly male between the ages of 40 and 59. In 2003 the majority of cases were Asian/Pacific Islanders (44%) or Black (21%)

TB Cases by Age and Gender 2003

	Male		Female	
Age				
0-9	3	2.9%		
10-19	6	5.8%	5	9.8%
20-29	15	14.4%	9	17.6%
30-39	16	15.4%	8	15.7%
40-49	26	25.0%	12	23.5%
50-59	19	18.3%	5	9.8%
60-69	7	6.7%	4	7.8%
70-79	7	6.7%	6	11.8%
80+	5	4.8%	2	3.9%
	104	67%	51	33%

TB Cases by Race and Homeless status 2003

Race	Non Homeless		Homeless		Total	
White	12	10.0%	7	20.0%	19	12.3%
Black	24	20.0%	8	22.9%	32	20.6%
Hispanic	13	10.8%	4	11.4%	17	11.0%
Native American	1	0.8%	16	45.7%	17	11.0%
Asian/Pac Is	68	56.7%	0	0.0%	68	43.9%
Unknown	2	1.7%	0	0.0%	2	1.3%
	120		35		155	

Risk Factors for Tuberculosis 2003

Trends in risk factors for tuberculosis in Seattle & King County are summarized in the following table.

Risk Factors for Tuberculosis Cases 1995-2003

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Foreign Born	90 69%	83 65%	82 73%	78 67%	73 70%	100 79%	107 77%	116 73%	105 68%
Homeless	21 16%	16 13%	12 11%	25 22%	13 13%	16 13%	12 90%	30 19%	35 23%
HIV Infected	8 6%	5 4%	5 4%	9 8%	0 0%	6 5%	9 6%	11 7%	9 6%
Total Cases	130	128	113	116	104	127	139	158	155

Foreign-born individuals continue to make up the majority of TB cases in Seattle & King County. The decline in percentage of foreign born cases from 73% in 2002 to 67% in 2003 is due in part to the increase in US born homeless cases in 2003. It is important to note that among non-homeless cases 85% are foreign born.

The number of active TB cases born in the African Horn countries of Ethiopia and Somalia showed a decrease for the first time since 2000 dropping from 21% in 2002 to 12% in 2003. Of note in 2003 is the increase in cases born in Mexico, China and Korea as seen in the table below.

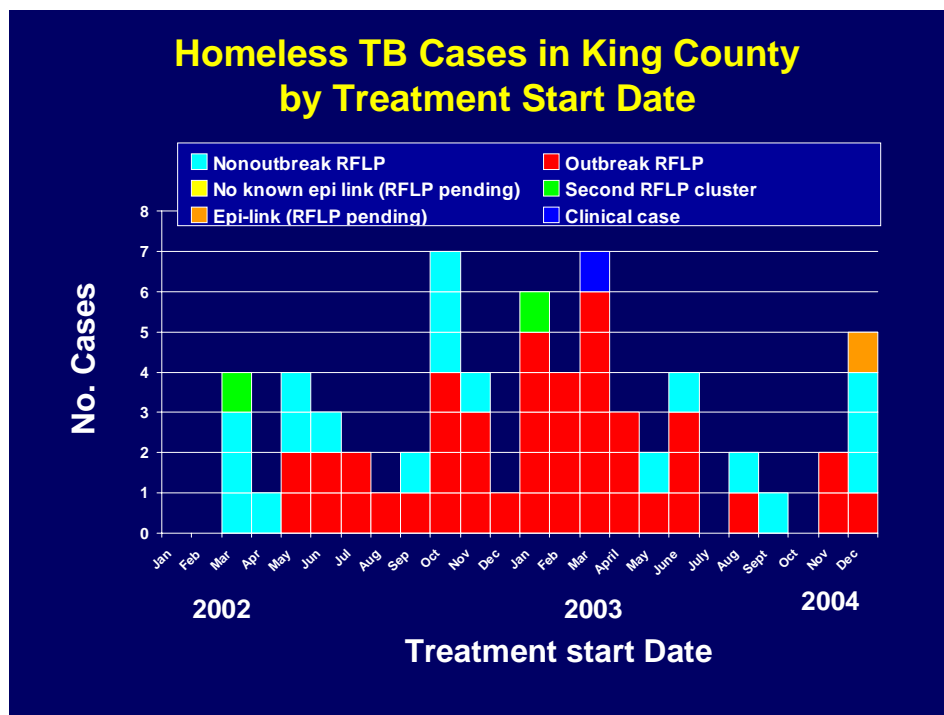
Trends in Country of Origin of TB Cases 2000 - 2003

	2000	2001	2002	2003
African Horn (Ethiopia, Somalia)	18 18%	24 22%	24 21%	13 12%
Mexico	8 8%	8 7%	8 7%	12 11%
Philippines	15 15%	16 16%	18 18%	12 12%
Vietnam	16 16%	17 17%	17 17%	12 12%
China	6 6%	4 4%	5 5%	10 10%
India	9 9%	9 9%	11 11%	10 10%
Korea	3 3%	3 3%	1 1%	8 8%
Cambodia	2 2%	3 3%	5 5%	5 5%
Total Foreign Born Cases	100	107	116	105

Homelessness

In the fall of 2002, the Public Health Seattle-King County (PH-SKC) Tuberculosis Program reported 22 cases of TB among their homeless population, which was nearly twice the number of cases reported in all of 2001. Contact investigations revealed that many of these patients frequented three common homeless facilities. Molecular analysis of seven isolates showed four to have an identical spoligotype and IS 6110 restriction fragment-length polymorphism (RFLP) pattern.

In 2003 23% of TB cases were homeless at diagnosis; the highest percentage of homeless cases reported since 1998 during a previous outbreak. Genotyping of strains from homeless individuals confirms that one strain is responsible for 44 cases (65%) among the homeless in 2002-2003.



The demographic and clinical characteristics of all 65 outbreak-associated patients diagnosed from May 2002 through December 2003 are summarized in the table below. Of the outbreak-associated patients, 53 (81.5 %) were male, and 26 (40%) were American Indian/Alaska Native. 10 (15%) outbreak-associated patients were also infected with human immunodeficiency virus.

**Characteristics of Outbreak-associated TB Patients Diagnosed in Seattle
from January 2002 through December 2003 (n=65)**

Demographic characteristics	No. (%)
Age (years)	
22-42	20 (30.8)
43-51	24 (36.9)
52-78	21 (32.3)
Gender	
Male	53 (81.5)
Race	
AI/AN	26 (40.0)
Black	20 (30.8)
White	10 (15.4)
Hispanic	8 (12.3)
Asian/PI	1 (1.5)
HIV infected	10 (15.3)
Genotyping	
Outbreak strain match	42 (64.6)

HIV Co-infection

In 2003, co-infection with HIV was a risk factor in 9 (6%) of cases. Among these individuals in 2003, the majority of HIV co-infected cases (66%) were among foreign-born individuals and 22% were homeless. This is in contrast to the 81% of HIV co-infected cases that were homeless in 2002.

Clinical Characteristics

In 2003, 74% of TB cases had pulmonary TB that required contact investigations. Smear result, which is available within a few days after sputum collection, was positive in 56% of pulmonary TB cases. MTD testing (nucleic acid amplification test) was utilized to make a rapid diagnosis in some of the smear negative TB cases.

Diagnostic characteristics of 2003 cases

Pulmonary cases	100	65%
Extra pulmonary cases	41	26%
Pulmonary and extra pulmonary	14	9%
Smear positive pulmonary cases	64	56%
Culture positive pulmonary cases	102	89%
All culture proven cases	137	88%
Death with TB	7	55
Death due to TB	0	0

Drug Resistance

Culture proven cases	137	88%
Sensitivities checked	132	96%
Isoniazid resistance	9	7%
Rifampin resistance	0	0%
Other drug resistance	13	10%
Polydrug resistance (not MDR)	5	4%

Contact Investigations

In 2003, we had multiple large contact investigations besides the homeless outbreak. Those include one middle school (4 cases), one high school, three universities/colleges (one case from each site) and one nursing home (3 cases).

Targeted Testing and Treatment

There has been CDC-sponsored Prevention Partnership with International District Clinic, 45th Street Clinic, and SeaMar Clinic; all three serve TB high-

prevalence populations in the community. Data is summarized in the following table. As the recommended duration of treatment of latent TB infection is 9 months, the data on completion of treatment is from 2002.

	SeaMar		ID Clinic		45 th Clinic	
TST placed	816		790		294	
TST read	604	74%	757	96%	161	55%
TST positive	101	17%	284	38%	22	14%
Starters 2003	72		189		35	
Starters 2002	125		102*		38	
Completers 2002	54	43%	85*	83%*	33	87%

* Due to incomplete data of 2002 from SeaMar Clinic, this is from 2001

Tuberculosis Control Program Highlights for 2003

TB Control Program is involved in three CDC-sponsored research projects, Tuberculosis Trials Consortium (TBTC), Tuberculosis Epidemiologic Studies Consortium (TBESC) and Contacts among Foreign Born persons (FBC). The program actively has recruited the subjects for TBTC and FBC. Field studies of TBESC will start in 2004.

Nurse Case Management was fully implemented in 2003. The goal is to provide case management for more than 90% of all TB patients in King County, regardless of who is the medical provider for the TB cases. The use of DOT has increased as a result of enhanced case management, although TB cases have been prioritized for receiving DOT, and compliant extrapulmonary cases (non-infectious cases) may not receive DOT for the entire course of treatment.

In 2003, a weekly case review by the TB control officer was initiated to supplement nurse case management. In addition, cohort review, in collaboration with the WA State TB office, was incorporated in the summer of 2003.

Another achievement by TB control program is the establishment of *the Seattle-King County Homelessness & Tuberculosis Coalition*. This coalition was created in the midst of a TB outbreak among people who are homeless and collaborated to develop "Tuberculosis Prevention and Control Guidelines for Homeless Service Agencies in Seattle-King County".

TB Control Program Challenges

1. Data management software and appropriate staffing

The TB Control Program must conduct organized and thorough contact investigations in work places, schools, nursing homes and other congregate settings. Storing, analyzing, and managing the data generated requires appropriate staffing of a software/computer programmer, epidemiologist and data entry personnel.

2. Ongoing homeless outbreak resources and timely genotyping results

Although the number of homeless outbreak-associated patients is decreasing, there are still a significant number of homeless contacts with latent TB infection who are not willing to undertake and adhere to treatment. Additional outbreak-associated cases will continue to appear sporadically, and it is important to obtain timely genotyping results. Furthermore, the database for genotyping results needs to be updated and analyzed in a timely manner so that the cluster of cases can be detected earlier.